ELECTRICITY *on the* FARM

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THE NATIONAL MAGAZINE OF RURAL ELECTRIFICATION

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GENERAL ELECTRIC

Editor's Chat

Keep on your BVD's

Times are critical in this country, both internally and externally. You and I are the moving units of a form of government which gives us a freedom of action and accomplishment which we love. Workmen are being gangstered into losing some of that freedom. Nations are losing it. We need: Belief in that freedom and Government—belief strong enough to be unswayed by propaganda, intimidation or genteel bribery; Valor to withstand racketeering and our own personal selfishness; Devotion to our country and our purpose sufficient to work and sacrifice for it. We must keep on our BVD's to hold this USA.

The Cover

"Getting Ready for the Fair" might be the title for this picture. In hundreds of places over the United States farm folks are getting ready this month to show produce, livestock, foods and handicraft at community, county and state fairs. Groups will be devising community booths in a spirit of competition or community pride. This picture is of a model builder working on the Westinghouse exhibit which was used at the World's Fair in New York; the electrified vs. the un-electrified farm. Millions of dollars are spent on fairs each fall. They help to keep us alert, interested and striving for something better.

Fluorescent Light

Miss Fahsbender's second article on fluorescent lighting, in this issue, completes one of the clearest, most informative, brief presentations on this new kind of lighting which has been made. We have not told you about it in order to urge you to use fluorescent lamps. On most farms the money would be better spent in improving the illumination with Mazda lamps. While one does get twice as much light from each watt put through the fluorescent tube as through the Mazda bulb, the lamps and fixtures are still expensive, and there are more gadgets to get out of fix and need replacement in fluorescent lighting. Still, this is a new and expanding development, and you should know about it. Large factories are springing up just to build these lamps. Engineer's meetings are filled with discussions about them and their uses. Undoubtedly, special farm uses will be found where fluorescents excel. So far we know little of the physiological effect of this light on plants and animals. While the light pot boils, we still have plenty of opportunity to get "steamed up" over the fine job of illumination to be done with the good old reliable incandescent Mazda that we know how to use.

Electricity Costs Money

Yes, electricity does cost money. It costs to wire. Equipment and appliances for using electricity cost money. The electricity must be paid for regularly.

But what real material benefit does one get in this life without cost? It's the things we work hardest for—the things that cost something, that we appreciate most, and that often bring us the greatest satisfaction and profit. Why do we want our children to have an education? It costs us money. Why do I have my tooth filled? That's expensive. Why do we buy cars, binders, tractors? They all cost. But in addition to their cost, we think about giving the boy a better chance; the comfort of biting down on a solid tooth; the saving in horsefeed and labor; the pleasure of possession and ease of operation and care; and the added profits which may come from "stepped-up" activities.

Yes, good things cost. But that is not so important as the results they produce for us. Are they worth the cost, and more?

What's that? Oh, "Where do we get the money?" Well, get a paper and pencil. Write! What does doing it some other way cost now? What costs will you save when you use electricity? What additional income will it enable you to make? How much will it increase the value of your property? Subtract. It may surprise you. Then, too, we are now on the up-side of an income wave.

George Kable

ELECTRICITY ON THE FARM
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Hot Water and Steam

Types of Water-Heaters and Steam Sterilizers. Cost of Operation and Farm Uses

Above: There is no substitute for running water and for hot water and steam where cleanliness and sanitation is essentail. Wash tub in creamery, Ingham County, Michigan. Hot and cold water are mixed through overhead valves feeding the hose shown.

Center: Typical round, insulated and automatically controlled electric pressure water heater.

Right: A 15-gallon, non-pressure, insulated water heater in an Idaho dairy. The tank is filled with a bucket or hose by removing the cover. Hand controlled.

NOTHING will take the place of an ample supply of running water or of hot water and steam where cleanliness and sanitation is involved. This is true on the dairy farm, on the poultry farm, on the fruit farm, and in the home on every farm. The question is how to provide this hot and cold water most conveniently and at reasonable cost.

Dependable Springs Few

Fortunate is the farm which has a dependable summer and winter supply of water under pressure from a spring located above the buildings. Few farms have it. Where the supply is several times that needed for use and there is a fall of at least several feet near the buildings, a hydraulic ram in combination with an elevated tank may provide a good supply under pressure. But for those farms which do not have these conveniences, or in some cases, even those which do, the modern, carefree pressure water system leaves little to be desired. First costs of such systems are remarkably low; operation is pleasingly dependable; and pumping costs are frequently reasonable enough to make the electric water system less expensive and troublesome to own and operate than a long pipe-line from a spring or ram. Many farmers have found this to be true.

Hot water is still far from being universally available on farms except as it is heated over an open fire, on top of the stove, or in a reservoir on the kitchen range. It is not so impossible, however, with the modern equipment available. There are many places on the farm where a constantly available supply of hot water would be a blessing: in the home, for instance, at the kitchen sink, in the bathroom, in the laundry and in the men's wash room or at the sink on the back porch; on the stock or poultry farm for mixing feeds cleaning and scalding utensils, for use on sick animals, for dressing poultry. In the dairy hot water becomes almost an essential.

The electric teakettle, with automatic cut-off to prevent injury if it boils dry, is becoming a popular piece of equipment on many farms. This is primarily a piece of kitchen equipment, but needs only a place to be plugged-in to use it in the bath-room, the dairy or the barn. It will heat a gallon of water to boiling in about 22 minutes. Or where a larger, open-mouthed utensil is better, the same 1250 watt heating element in a 14 quart galvanized pail is available. In it one can heat 11 quarts of water to about 150° in 33 minutes. This kettle and pail are for heating water with reasonable speed for immediate use. Each costs under $10.

Two-Gallon Heaters

Where small quantities of hot water are needed frequently and it is desirable to have a supply always available, a different type of small heater may be had. These are two gallon heaters with elements of around 1200 watts which may be plugged into a convenience outlet. A rubber tube or small copper tube connects the tank to the cold water pipe of the water system. After the tank has been filled and heated, it

always remains full, and to get hot water out, one opens the valve and runs cold water in under pressure. The pipes on this tank are small, and the water comes out slowly, which helps to prevent mixing the hot and cold water in the tank. These cost around $25. They have automatic electric temperature controls, are well insulated and are economical to operate.

The most commonly used pressure water heaters are the heavily insulated tanks of 30 to 125 gallons capacity or larger which are plumbed into the pressure system and have automatic controls for cutting off the current when a predetermined water temperature is reached. These tanks are provided with either one or more heating elements of high or low wattage, depending on how they are to be used. Where low rates are available for night service, it is customary to use large tanks which will be heated up during the night and the water stored for use the following day. Tanks may be secured either square or round, and in the 30 gallon size may be had in table height to fit in as part of a kitchen cabinet unit. The same style tanks are used in house or dairy.

A number of heaters have been placed on the market, designed especially for use in the dairy, although they may be used very satisfactorily in other locations.

Open top electric water heaters of 5 to 10 gallons capacity are being made by a number of companies. They are insulated containers into which water is poured and heated and then drawn off for use by means of a faucet. Some have automatic temperature controls which cut off the electricity. This type of heater costs less than a pressure type heater. You put in the amount of water you wish to use, heat it and draw it off without any mixing of incoming cold water.

One of the most popular dairy water heaters in the last few years is the non-pressure, pour-in type. These are insulated containers with temperature control switches and with a cold water tank or receiver in the top. When one wants a gallon of hot water, he pours in a gallon of cold water and the hot water comes out the top. Because the tank is not under pressure, the cold water is conducted very gently to the bottom of the tank and does not mix with or stir up the hot water to any extent. They are safe from burnouts because they are always full of water and safe from excessive pressure because the tank is not under pressure.

Water at 180° or higher is quite satisfactory for sterilizing milk utensils if the utensil is kept in the water or the water in the utensil until both come to the same temperature. Hot water is an effective sterilizing agent for small dairies if used intelligently.

Where steam sterilization is required by health or milk inspection departments, or where enough utensils are to be sterilized to make a steam installation desirable, there are two types of electrical equipment which have proved especially popular.

The controlled steam cabinet is an insulated cabinet with space heat-

(*More on page* 13)

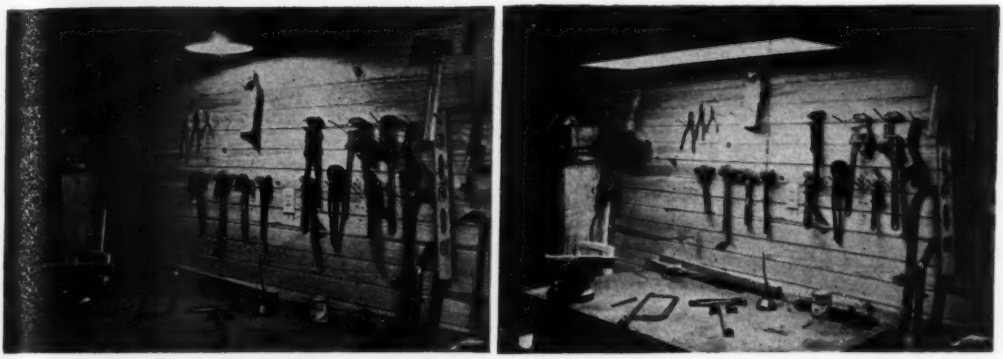
Left: This pour-in automatic electric heater stands on the floor with its hot water discharge pipe over the edge of the wash tub. When the man pours cold water in the top, hot water runs into the tub. The heater is always full. A thermostat cuts off the electricity when the water is hot.

Right: Small controlled-steam sterilizer on an Indiana farm. After the wet utensils are placed in the cabinet and the switch closed, the sterilizing process is automatic. The utensils are always sterilized the same and come out dry and ready for use.

Electric steam accumulator at right and uninsulated sterilizing cabinet at left on a farm in Douglas County, Nevada. The boiler must be designed to fit specific requirements. After the hot water for washing and the steam for sterilizing has been drawn off, the boiler is again filled about two-thirds full of water, the valves and switches closed, and it will be ready again with steam at the next milking.

Fixtures for Fluorescent Lighting

By **MYRTLE FAHSBENDER**
Director of Home Lighting, Lamp Division, Westinghouse Electric and Mfg. Company, Bloomfield, N. J.



▲ A 1,000 watt incandescent bulb fixture (above) is replaced with a fluorescent fixture (right) consuming the same electric current but producing three times more light on the work bench. The fluorescent fixture (using two 40 watt bulbs plus 17½ watts consumed by the auxiliary) is plugged into the existing socket and its weight supported on chains from the ceiling. This style of RLM fluorescent fixture may also be had for 100 watt bulbs (60 in. long) for use over long sorting or grading tables.

▲ This 20 watt (plus 4½ watt auxiliary) white fluorescent fixture gives good light for use in small areas such as small milk rooms. Fixtures of this same type can be used in barns for general lighting.

IN the April issue you read about fluorescent lamp bulbs and what made them "tick." Perhaps you have been pondering in the meantime where you could add fluorescent lighting in your home or outbuildings to have better light for easier, safer seeing. Also you may have been a bit curious as to what fixtures would look like with these long, slender tubes of light.

Let us review a few facts* before further examining these fixtures. It is true a fluorescent bulb produces more light for the current used, but the cost of current is only one of three factors to consider when you are planning lighting. The other two factors are: cost of lamp bulbs and cost of fixtures. Today the cost of fluorescent bulbs is more than incandescent bulbs, and fluorescent fixtures compared with similar styles of incandescent fixtures are also more expensive.

If you consider fluorescent lighting merely from a dollar and cents point of view you may find you are not saving anything, due to the cost of equipment. Not in every case can you justify fluorescent lighting on a dollar and cents basis. However, the advantages of more light, cooler light, light of daylight quality and perhaps a desire to have on your farm this newest type of lighting might outweigh the cost consideration, and in such cases the question then becomes, "What kind of fluorescent lighting is right for me?"

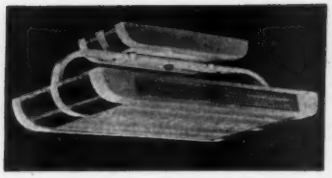
It is the purpose of this article to discuss where fluorescent lighting may be used in the farm home and outbuildings. Whether or not you would install this type of lighting is a question for you to decide.

To the ever recurring inquiry, "Can I use fluorescent lighting in my home?" the answer is "yes." Now let us see where and what the advantages would be.

The farm kitchen is probably the most "lived-in" room of the house and this is an excellent place to try your first "living with" fluorescent lighting. All too often this important work room is poorly lighted by the wrong size bulb either exposed or in a glass globe in the center of the room. If this is the only lighting, you stand in your own light at the sink, range or work table. Try a fluorescent pin-to-wall lamp. You simply hang it on a picture hook in the wall and plug the end of the seven-foot cord into a nearby convenience outlet. You will be amazed at the fine

*See April issue, "Facts About Fluorescent Lighting."

▲ This fixture is also made in the suspended style to hang over the dining table. Use four 15 watt fluorescent lamp bulbs.*



▲ Close-to-ceiling style using three or four 20 watt fluorescent lamp bulbs.* Ivory and gold with decorated glass bottom panel.

▲ A semi-suspended fixture with circular plastic shield. In styles with two or four 20 watt fluorescent bulbs.*

Living and Dining Room Fixtures

amount of light thrown directly on your task. These long, slender tubes of light are excellent for use under cabinets above working surfaces, too. The center kitchen fixture for the average size kitchen should be equipped with not less than two 20 watt bulbs which should be shaded by glass or plastic.

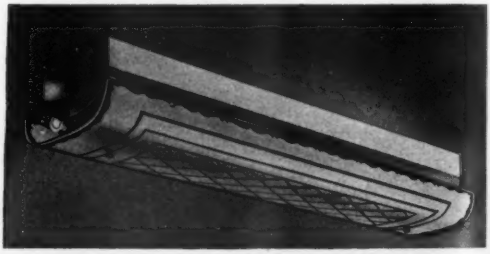
Washing and ironing on dull, dreary days will be a pleasure under daylight fluorescent bulbs. The daylight bulb is recommended particularly where washing and ironing is done, as under this approximate natural daylighting, spots and scorches are more easily seen.

The bathroom is another room where you'll find fluorescent lighting very pleasant. The ideal installation is a central ceiling fixture and a pair of lamp bulbs—one on each side of the mirror. If the only fixture now installed is a bulb on the wall over the mirror the fluorescent fixture shown at the bottom of this page can be used to provide both direct and indirect light.

The kitchen, laundry and bath are the most logical rooms in which to first use fluorescent lighting. This is true because fluorescent lighting is a blue-white, more cool light in appearance when compared to the warm, reddish-yellow color of incandescent lighting and to some people colors do not look "natural" under fluorescent lighting. In the living, dining and bedrooms more color is used in wall coverings, rugs, drapery and furniture upholstery and in these rooms more thought must be given to the effect of lighting on colors. However, it is a proved fact that when you live with fluorescent lighting you accept its different appearance and its effect on colors, just as we have accepted incandescent lighting which differs greatly from natural daylight.

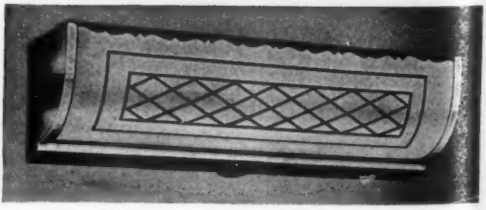
▲ This fixture is mounted flush on the ceiling. Styles have either two or three 15 watt fluorescent bulbs* shielded by flesh tinted decorated glass. For bedrooms.

▲ Close-to-ceiling fixture made for two or three bulbs, either 15 or 20 watt*, with decorated flesh tinted glass. For bedrooms.



▶ This fixture, using two or three 15 watt bulbs*, can be used in the bath and with two or three 20 watt bulbs in the kitchen.

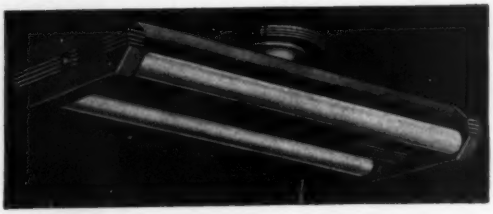
▶ Suitable for the kitchen or laundry, using two 20 watt fluorescent bulbs.*



▶ For use over bathroom mirror. Use two 14 watt fluorescent bulbs.*

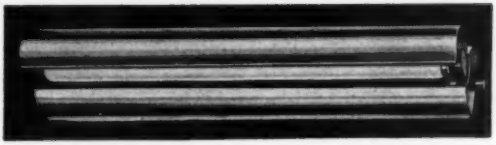
*Plus current consumed by auxiliary.

Fixtures for the home using fluorescent bulbs are not too numerous but those illustrated are attractive, shaded designs and are available. Prices are not given due to variations in cost in different parts of the country, but as stated previously, costs are considerably in excess of that for a similar incandescent fixture.



Suitable in laundry or kitchen when exposed tubes will not be in line of vision. Use two 20 watt bulbs* "daylight" recommended.

Totally glass enclosed fixture for the kitchen or laundry, using two 20 watt fluorescent bulbs.*



Wall bracket with adjustable metal shield — uses one 15 watt flourescent bulb.* Can be mounted vertically at each side of bathroom mirror.

Fluorescent Lighting in Farm Buildings

Fluorescent lighting can be used to advantage in farm buildings where high levels of light will make the job easier to see; as over the work bench for the repair of farm implements.

In the milk house, good light is always desirable and a well lighted milk house is usually a sanitary one.

The "daylight" fluorescent bulb is the most economical way to have daylight artificially. Where the job is sorting and grading of fruits, tobacco, vegetables or any job that requires color distinction, the use of a fluorescent daylight bulb is an advantage. In other fluorescent fixtures, use the bulb marked "3500° white."

In a large cow barn where considerable time is spent in milking and feeding, fluorescent lighting may be used especially if the milking barn is a show place for visitors. When farm chores are done on hot sultry days or nights the "cooler" light from a fluorescent fixture will be more comfortable.

On the farm as in a factory or store, fluorescent lighting can easily be misused. It is not a source of light to use everywhere regardless of the work. Before you install any fluorescent lighting in the home or outbuildings study the tasks you expect to do, then use incandescent bulbs or fluorescent bulbs whichever is best used for the job.

To help you know where not to use fluorescent lighting here are a few hints:

Don't Use Fluorescent Lighting

1. To light the yards, the hay mow, to candle eggs, or in places where you want to project the light a long distance. Fluorescent lighting is produced in a long tube and cannot be readily controlled to produce a spot of light. For these mentioned places use incandescent bulbs.

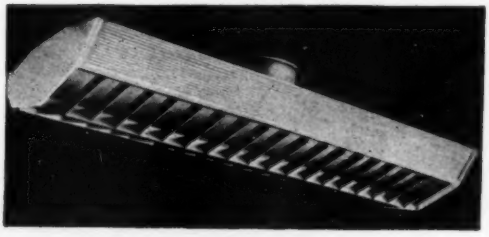
2. Outdoors or in unheated buildings where temperatures go below 35°. Below freezing temperatures may prevent the lamp from lighting.

3. In places where the light is used only for a short period of time or where it is turned "on" and "off" frequently. Constant starting reduces the life of the bulb.

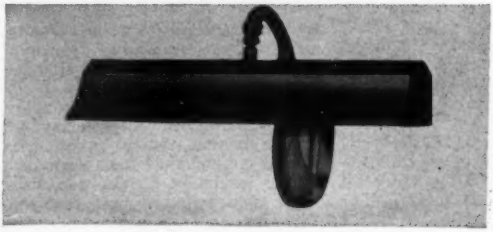
4. In open, unshielded bulb fixtures where there is a great deal of moisture in the air.

In conclusion, it should be emphasized again that fluorescent lighting has advantages and limitations the same as incandescent lighting. Each has its proper place. With incandescent lighting there are just two parts: the lamp bulb and the socket. With fluorescent lighting there is a greater maintenance problem because there are four parts needed: The lamp bulb, two sockets, a starter switch and an auxiliary.

Today we are more familiar with incandescent lighting because we have an accumulation of knowledge from 62 years of living with it. Fluorescent lighting is still a baby in the "creeping" stage. Since infants have a habit of "popping up" over night, these articles aim to tell you something of this infant before you open your doors to him.



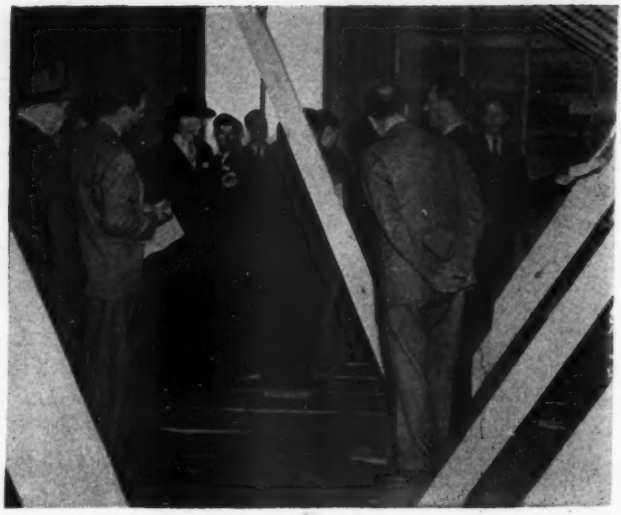
Kitchen or laundry fixture using two 20 watt fluorescent bulbs* behind glass strips. Winged louvered bottom.



A pin-to-wall bracket using one 15 watt lamp bulb.* Can be used over sink, range, bed, sewing machine or work table.

*Plus current consumed by auxiliary.

Apple Cold Storage Facts



Dr. Anthony talking to Short-Coursers about the construction of the Pennsylvania State College 10,000 bushel apple storage. The main insulation is ground cork, but sawdust, shavings and buckwheat hulls are proving quite satisfactory. The walls have six-inch studs and the spaces between studs are filled with "pour" insulation. Construction cost will vary between 50¢ and 80¢ per bushel capacity. Power used is about one kilowatt-hour per bushel per season. The storage paid for itself in six years.

THE facts presented below were taken from papers and discussions at the Seventh Annual Rural Electrification Short Course at Pennsylvania State College last May. Most of the information came from papers by Mr. Terry Mitchell of the Frick Refrigeration Co., Prof. F. G. Hechler, Director, Engineering Experiment Station, Pennsylvania State College, and Dr. R. D. Anthony, Department of Horticulture. The papers for the most part were technical and intended to give the latest information on the materials for, and the design and operation of farm cold storages. Only the high points are given here.

Farm Storage Better Than Commercial Storage

While commercial storage may have some advantages over farm storage, there are a number of advantages which farm storages have over large central plants. In the matter of cost of plant on the farm (1) There is no additional land cost. (2) There is no railroad siding cost. (3) The labor for operating the plant may be farm labor. (4) Many farms have other buildings which may be remodeled into cold storages.

Attention was called to storage costs in 23 farm storages in New York State (Cornell Exp. Sta. Bul. 724, 1939), which averaged 16c per bu, 3.6c of which was for power. Costs were lower in the larger storages: 14.3c per bu in those averaging 10,000 to 40,000 bu, and 22.2c for those under 10,000 bu. The difference was due largely to the higher per-bushel first cost of the smaller plants. Local commercial storage charges averaged 23.2c. "Growers who owned their own storages received on the average about 16c more per bushel for their better grades of McIntosh than did the other growers who hired storage." Home storage gave a labor and marketing advantage. Apples were stored "orchard run" which saved labor for packing and hauling at picking time and permitted the marketing of a fresh pack of high grade fruit, and the choosing of the daily market which offered the best price. Packing was also done when regular farm labor was available.

There is another advantage in the grower being able to control his own ventilation and storage conditions. Scalding takes place in commercial storages usually because of low temperatures and poor ventilation, which can be regulated on the farm to suit individual needs.

Insulation of Storages

There is considerable difference of opinion regarding the insulation of fruit storages. Much depends on whether the storage is located in the South or North, and whether the fruit is to be stored in the summer time, or just during the winter months. In reasonably cold climates, say the northern half of the U. S. east of the Cascades, where apples are to be stored only during the winter months, buildings of tight, double construction need very little if any insulation on the side walls. The saving on the first cost may often more than pay the small added cost of cooling. An 18 in. to 2 ft. cinder floor is recommended, and a ceiling insulated with 8 in. of granulated cork or its equivalent. Concrete over the cinders with a slatted floor above is desirable.

Insulating materials, when used, should be fire resistant, odorless, vermin and rodent proof, and moisture resistent for the period it is to be used each year.

Insulation is of several types. "Fill" insulation may be rock-wool, glass-wool, fibre-glass, granulated cork, redwood bark, shavings, etc. "Blanket" insulation is made by stitching or otherwise fastening loose "fill" materials between sheets of paper. "Boards" of compressed cork, vegetable fibres, and hair, are in common use. All of these materials depend upon their poor heat conductivity for their insulating properties. Published insulating values of these materials are based on the material being dry. In use it is seldom dry. So provision must be made for keeping it dry, or drying it through ventilation during periods when the storage is not in use. The insulating values of all of these materials is dependent upon the millions of small air cells between particles of the material. If these cells fill with moisture, the insulating property is gone.

"Foil" insulation is of a different type. It is a thin sheet of metal and obstructs heat by reflecting it back. It also acts as a moisture and vapor seal. It must be properly applied to be effective. Fill or board insulation is usually used in ceilings.

Design for Cooling Period

It takes relatively little power to keep fruit cold after it is once cooled. The critical time for any cold storage, both as to design and operation is the cooling down period. It is not just a matter of taking the heat out of the fruit, like taking heat out of wood or stones. The fruit is alive after it is picked. It breathes, and gives off heat in the process of respiration. As the temperature is lowered, the respiration diminishes. One grower was reported to have put warm peaches in his apple storage. Because of the high initial temperature, his refrigeration machine could not keep up with the respiration of the peaches. He could not lower the temperature at all, and he lost the entire crop. Pear respiration produces twice as much heat as apples. Your refrigerating unit *must* be large enough to take care of this initial cooling which may last about 30 days. After that, only a fraction of the capacity will be needed.

Management Important

Since this first cooling is the critical period and vitally affects the first cost and capacity of the plant, attention should be given to proper management at this time to get best results. A considerable saving can usually be made by allowing the warm fruit to cool over night in the picking boxes in the orchard. This takes a big load off the compressor. Some object to this because of the field mice carried into the storage room in the lug-boxes and the subsequent damage they do to the fruit. A good cat placed under the slatted floor will usually take care of the field mice.

Storage Plant Costs

New storage plants under 10,000 bushels can be built for around $1 per bushel. Larger plants, or small ones where a room or building is available, may be built for as little as 50c per bushel.

The Portland Cement Association 33 W. Grand Ave., Chicago, manufacturers of refrigeration equipment, and state colleges in states where fruit growing is important can give specific information on cold storage plant design.

Even Heat for Country Homes

By **HAROLD R. ALLEY**
Shermer Road, Northbrook, Illinois

AS early as I can remember, I made up my mind to leave the farm. There must be some place, I thought, where the bedroom floors are not quite so cold, on a wintry Kansas morning. I went away to school, landed in the city, lived in apartments for several years, and five years ago our family returned to the farm. This time it is an Illinois farm. The farm house was a run-down affair without modern plumbing, running water, paint, improved electrical wiring, or a modern heating plant. The bedroom floors of our Illinois farmhouse were icy compared to the old Kansas home.

By chance, a city friend, who is a heating and ventilating expert, visited our farm one blizzardy Sunday afternoon and said "What you need is automatic heat." So we investigated types of automatic heating, and various fuel costs and ended up with a coal stoker and complete set of automatic heat controls. At last, we have a farm house that is comfortable in winter months. From October until June our home is maintained at 75 degrees. We do not need to apologize to city friends for a farm house that is uncomfortable. We have ceased coming home from the movies to find that the fire has gone out or the furnace overheated. Icy bedroom floors, shivering at breakfast, and wearing of sweaters or overcoats in our house, is a thing of the past. We have shaken our last furnace grate since we installed our "electric coal shovel."

The coal hopper of the stoker is filled once a day with stoker coal using an old fashioned coal scuttle. The clinkers are removed once a day with a pair of clinker tongs. The room thermostat is set and the house is automatically maintained at the desired family temperature.

Modern coal stokers are dependable mechanisms. Types may be obtained which will feed coal from the coal bin directly into the firebox of the boiler or hot air furnace. Our stoker is of the hopper type but if we ever build a new house, the plans will include a bin feed stoker and a specially constructed coal bin, similar to those described by the Bituminous Coal Association of Washington, D. C. A dependable stoker may be had for less than $300; much less than $300 if the homeowner can do the installing. A stoker will handle lower priced coal than hand firing in most localities. Just now, we are saving $1.90 per ton by using a stoker.

Last winter, every member of our family had siege after siege of common colds. Since we installed the stoker none of us has had a cold. I attribute the improvement to the elimination of drafts, uneven temperatures, and to rapidly changing temperatures in our home.

Do you see the little motor down there in the white circle? It feeds coal into the heating plant and dumps the ashes into a basket on the Murray Wigston farm near Poughkeepsie, N. Y. The action of the motor is controlled automatically by a temperature regulator in the living room.

Low ash coals are best in most coal stokers. Less difficulty is experienced in operating the stoker and less time is required for disposal of the clinkers. Modern stoker coals are oil treated, practically dustless, and have an ash content of about 4 per cent. Poorer coals have an ash content up to 16 per cent. The stoker is controlled by three electrical devices. The room thermostat maintains the desired temperature by starting and stopping the stoker feed. Room thermostats are sensitive, accurate, and fully dependable. A "limit control" protects the furnace or boiler from overheating in extra severe weather or in case of emergencies. The primary control is to keep the fire from going out in mild weather, when the room thermostat is not calling for heat. Stokers usually have three or more coal feed rates which will allow for differences in heating plants and heating requirements.

Silage Need Not be Green to be High in Carotene

Carotene, a yellow pigment of plants from which vitamin A is formed in the animal body, occurs in close association with green coloring matter of pasture plants and other green forages. The green color of cured roughages usually is a good indicator of carotene content.

With silage, however, scientists of the Bureau of Dairy Industry have found an exception to the rule. The green color may be greatly reduced in the fermentation process without losing an appreciable amount of carotene so long as the fresh green feed is packed tightly enough in the silo to force out and keep out air.

Vitamin A is a factor in controlling growth and influences resistance to infection.

Some Pointers on Poultry

At the Illinois Farm & Home Week last winter, Prof. L. E. Card of the Poultry Department made these comments:

Experiments indicate that the effect of lighting on egg production is one of direct stimulation of the hen and not the lengthened feeding period provided. Light enters the eye, stimulates the pituitary gland located in the head, which in turn stimulates harmone secretion, producing more eggs.

In experimental pens, receiving 14 hours of light per day, the feeding time was successively cut down until it reached one 20 minute period each 12 hours. A hen cannot eat enough mash in that length of time, but if given feed in concentrated pellet form, she maintained her body weight and production. Such short feeding periods are, of course, not recommended, but did tend to prove that it was the stimulation of the light that increased production.

Since light takes the place of natural stimulation, Prof. Card recommends that it be used carefully and with good judgment, especially in the case of breeders.

In regard to electric brooders, Prof. Card said: We just take them for granted. Electricity comes nearer providing uniform, non-fluctuating heat than any other brooder; and that's important. One of the biggest mistakes on the farm is hothouse brooding conditions. More chicks starve to death because of too much heat than we realize. They sit in the heat rather than stir out and eat.

Mr. Gustafson of the Central Illinois Power Company reported that poultry water warmers increased egg production an extra 10 percent on a test farm. Hens drank 15 gallons of electrically warmed water, and less than one gallon from a nearby container warmed with kerosene heaters.

Allow 15 sq. in. per Chick

Prof. Whitfield of Iowa State Poultry Dept. gave some recommendations on brooding at the Iowa Rural Electrification Conference in January. We jotted down these points: A 10′ x 12′ house should be used for no more than 250 chicks. Have brooders large enough to raise healthy birds—at least 15 sq. in. per chick under hover. There is a tremendous amount of starving of chicks by being crowded at the feed troughs and water fountains. The electricity cost for brooding is unimportant in comparison with added value of good chicks. Chicks that are crowded are usually runty. Broilers that mature by August usually sell for 12c to 14c per pound; those that are ready to sell in May bring 18c—20c. Too much emphasis is placed on low mortality. With broilers, the number of weak chicks that die is not nearly so important as the total weight of those that live.

Electric Room Cooling

The small radio-looking box in the window is a complete electric refrigeration system for room cooling. They are made in several sizes. The one shown is one-third horsepower. The unit rests on the window sill and the space on either side is filled with baffles. There are no pipes or ducts, and the units need only to be plugged into the electric circuit. They cool, clean, filter and take the humidity from room air. The price of this unit is about $150. They are excellent for sick rooms, for hay fever sufferers and for sleeping.

Two other methods of cooling rooms at night are available. One is the attic fan method in which a large silent fan is placed in the attic for drawing warm air out of the house at night and permitting cool air to flow in through the windows. A similar arrangement may be provided in a single room by keeping the room closed from the remainder of the house and placing a special exhaust fan in a window very much like the cooler shown in the illustration. Another outside window is opened to admit cool outside air, the fan keeping up the through circulation.

Electric Wood Splitter

By A. V. KREWATCH

Do you split wood?

Some folks like to split wood, and others split it because they have to. In either case you might be interested in this home-made splitting device which was rigged-up from an old truck chassis and worn-out gasoline engine on my father's farm near Delmar, Delaware.

The cylinder-head of the engine was removed, and a splitting wedge made of ½ inch steel with a 5 inch face was bolted to the piston. The wedge was sharpened and had spread enough to split an 18" stick of wood wide open in one crack. The splitting block as shown was anchored to the frame of the engine with four ⅝ inch rods and both mounted on the frame of the truck. It can be adjusted to accommodate a 24" length of wood. Adjustment for shorter lengths is made by putting in blocking. Large pieces of wood are split near the side. Seldom do they stick on the wedge. If they do, the wedge pulls into the cylinder thereby releasing the wood.

A rope drive was used over the 42 inch flywheel of the engine and the 3½ inch V pulley of the ½ horsepower motor, giving about 95 splitting strokes per minute. A V velt is recommended because the rope slipped enough on the motor pulley to cause it to get very hot. Most of the parts came off the junk pile, so the actual cost of the outfit was very little.

Above: Mr. Bellman and Mr. Joseph Krewatch splitting wood. They split 8½ cords of wood in 9 hours, using 5½ kw hrs of electricity. It was mostly pine, with some oak, gum and maple mixed in. Very little difference was noted.

Wood splitter made from an old 12 hp gas engine mounted on a discarded truck chassis. A 3 hp gas engine first used to drive the splitter was replaced by a ½ hp, 1750 rpm, repulsion - induction farm chore motor.

Hot Water and Steam

(*Here from page 6*)

ing elements and an automatic control which shuts off the electricity when the sterilization has been completed. After the utensils have been washed, they are placed immediately in the cabinet, wet from the rinse water. The door is then closed and the electricity turned on, and you can forget it until the utensils are again needed. The cabinet heats up until the water on the utensils turns into steam. The electricity then cuts off, the utensils dry and cool and remain in sanitary storage until needed. These cabinets are made in most any size desired. A separate water heater must be provided.

Steam accumulators are most popular on the West Coast. They are steam boilers in which the water is heated gradually with a relatively low wattage heater so that the tank is full of super-heated water when steam is needed. As soon as this 250° or hotter water under pressure is released, it flashes into steam. Super-heated water for mixing with cold water in a mixing pipe may be drawn from the bottom of the tank, and steam from the top of the tank. An uninsulated steam cabinet is used for sterilizing the equipment.

In estimating the power used in heating water electrically the following figures may be handy. 1 kilowatt-hour will heat 2½ gallons of water 130° (from 50° to 180°) in 1 hour. This allows for a 20 per cent heat loss in tank, pipes, etc. Similarly 1 kilowatt-hour will heat 5 gallons of water from 60° to 125° in one hour.

Not Too Soon For Poultry House Lights

The natural decline in egg production of fowls at this season, caused by gradual shortening of the length of day, the generally warmer weather, and the approach of the end of the birds' production year, can be corrected to some extent by the judicious use of artificial light.

C. S. Platt, of the New Jersey College of Agriculture, says that the average bird can be kept in production for a few additional weeks if given the benefit of the stimulation of light.

"The best practice is to provide lights from 3 a.m., Standard Time, until daylight.

"Ham What Am"

Well, threshing time is over!
And I'm so glad to say
That I could get the dinner
In the new electric way."

I didn't have to scurry
From the table to the stove
To rescue beans from scorching.
My mind was free to rove.
For I put them in the cooker—
And turned the heat just right.
Those beans were oh, so tender
A joy to taste and sight!

For meat I had a big ham.
It's always been a trial
To keep it nice and juicy;
There's really no denial
That you must "watch your business"
And baste—and baste and turn
Just, oh so many times—
It really mustn't burn!

But I plopped it in the oven
Turned the switch and closed the door.
And forgot it till the time to serve—
'Twas child's play—nothing more—
And when the meal was finished
They all said "Man, oh man!
Electric cooking sure is fine
And that's the 'Ham what Am!' "

There's just one thing I'm wishing
That by another year—
"Elec" will clear the table—
Inventors—lend an ear!

MRS. STANLEY E. MARSH
R. 1, Box 107
Buchanan, Michigan

Above, it's easy to keep farm records up to date in a few minutes a day with ample glareless light from an inexpensive "pin-it-up" sight-saving lamp like this. Use 100-watt Westinghouse Mazda bulb.

★

Left, repairs are made more quickly, and accidents avoided, with adequate light over your work. Two 20-watt "daylight" Fluorescent bulbs are used in this fixture.

★

Below, the glaring, unshaded bulbs in this living room have been replaced by inexpensive, attractive "adapters" which give pleasing indirect illumination, easy on the eyes. Use 60-watt, silvered bowl, Westinghouse Mazda bulbs.

Showing how "adapter" fixture is inserted in single socket fixture to replace glaring, unshaded bulb.

Enclosing glass bowl "adapter" fixture.

Fixture for Silvered Bowl lamp bulb.

Inexpensive plastic bowl "adapter" fixture.

Take the glare out of your eyes with *"ADAPTER"* fixtures

No longer does it cost a mint of money to modernize your bare, unshaded lamp bulb fixtures into attractive shaded fixtures that provide pleasing, glareless illumination.

For every requirement, there is an inexpensive "adapter" unit that is easily and quickly inserted in the old lamp socket. Typical "adapter" fixtures are illustrated at the left. Ask your Westinghouse dealer to show how easily and inexpensively you can enjoy better light for better sight.

squint and strain your eyes?

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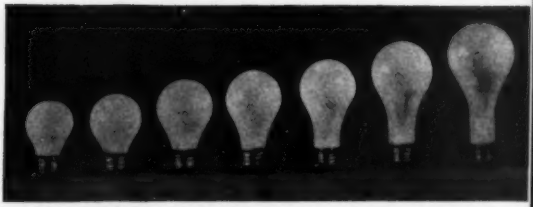
Ample illumination to help you really SEE what you are doing costs unbelievably little. Yet you doubtless know of many instances—perhaps even in your own home—where too small lamp bulbs are used for reading or working. To avoid squint and eyestrain, use a total of 100 watts in your reading lamps—the cost is less than *2 cents* for three hours use.

Now, with the lower prices for high quality Westinghouse Lamps, you get more illumination for your money than ever before. Westinghouse Mazda Lamps are now selling at the lowest prices in history, and you can save even more by buying in quantity instead of a single bulb or two at a time.



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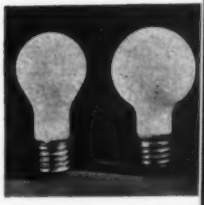

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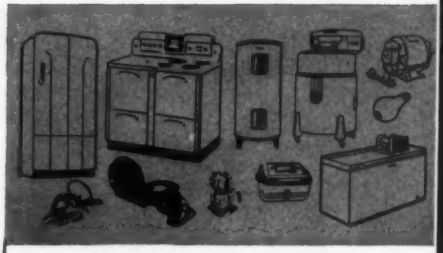
Attractive booklet gives many useful hints for adequate illumination without wasting electricity. Recommended types of fixtures for use in each room of the house, barn and yard lights are illustrated and described. A copy is yours for the asking—mail the coupon today.



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VERY HOUSE NEEDS WESTINGHOUSE

Electrical Housekeeping

Edited by
GAIL MEREDITH

Outwitting the Heat

The day the Fortnighters met at Terry Jones last month, the thermometer on the back porch stayed around ninety-five all day. The wool we were knitting into sweaters and socks stuck to our hands, and when someone dropped a ball of yarn, she let it roll around under her feet because it was just too much of an effort to stoop over and pick it up. There wasn't a leaf stirring in the big elms at the corner of the house, but two electric fans kept a little cooling breeze sweeping the length of the shady porch.

Grandma West wet her forefinger and held up a withered brown hand.

"Comin' from the east," she said with a twinkle in her snapping black eyes. "Might blow up a shower 'fore night."

"East or west, whichever way they blow those fans are life savers days like this," said Marty Jones, Terry's sister-in-law. "I sometimes wonder how we ever kept comfortable without them."

Uses Fan a Lot

"Do you really run a fan much?" asked Orpha Tiller who had just finished a sock and was leaning back against the screen fanning herself with a palm leaf fan.

"Lots," answered Marty. "Do put that fan down, Orpha, and move over where its cooler. I keep a fan going wherever I'm working. I couldn't iron with a fan like yours in my hand. Nor stir up a cake, nor dust the furniture. And I've never found that I could fan myself to sleep. The fans at our house—"

"Fans! How many do you have for goodness sake?" asked Ethel.

"Three,—no four. The one in the kitchen is built in the wall so that stays where it is, but we have three others that some one is using most every day this weather. When we are working, when we sit down to read or lie down for a nap. There's one in each bedroom at night. They blow the hot air out one window and draw the cooler outside air in through another. I've been trying to figure a way to run one in the garden when I'm weeding. They are the coolingest things I know for summer."

"Not the coolest."

"Oh, no—"

"You're wrong, Marty," Bess got the floor by raising her voice one notch higher than the rest of us. "If I had to choose what it was in our house that did the most to make heat bearable, I wouldn't hesitate a minute to say our water system."

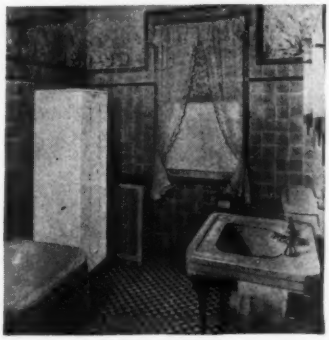
There was a doubtful pause while we considered the matter.

"Right from the start," Bess went on firmly. "You turn a faucet and the water runs out. Think of all that saves,—going out in the hot sun, drawing up a bucket of water hand over hand or pumping it out of the well with a blistering pump handle,—then carrying the heavy pail back to the house.

"It is so much easier to get that you use more of it. Plenty of water for cooling baths; plenty of water for clean clothes; plenty of water for mopping up floors and porches. No there isn't anything like a good water system to get around this heat."

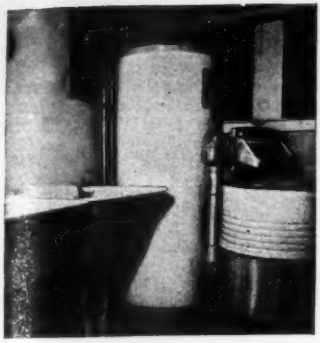
"I'll take my laundry," said Ester Halbert. "I know I have to have the water for that, but even with running water, washing and ironing would be pretty hot work if I had to boil the clothes on a hot stove, rub them on a washboard, and turn heavy sheets through the wringer by hand. But that isn't as bad as stoking fires all day Tuesday to keep a batch of sad irons hot. No sir. An electric washer and ironer do more than anything else I have to keep me comfortable in the summertime."

Grandma West shook her head. "Pizen neat," she muttered. "A body can wear less clothes, sleep on unironed sheets, and eat off oil-



Above: "If I had to choose," Bess said, "I'd say the water system is the most cooling thing we have. No pumping and carrying—clean clothes—cool baths."

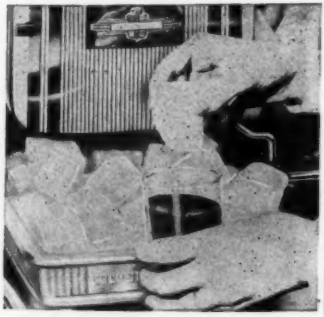
Right: "It's as hot a job to carry wood and ashes as pails of water," "clicked" Alice. "My electric range cooks and bakes without fuel, and a fire in the kitchen is just torment these days."



cloth 'thout doing anybody any harm this weather."

"I do not see how you can possibly claim that a washing machine does any more toward keeping you cool than an electric range. I'd say a lot less," Alice Townley's needles clicked sharply as she spoke. "It's as hot work to carry in armfuls of wood as pails of water. It's hot work to pick up chips and kindling. It's even a hot job to carry out ashes and clean up around the stove and woodbox. A fire in the kitchen is just plain torment these days, and still we have to cook and heat water to wash.

"I thought I'd never call my kitchen really hot again after we got an electric range. There it is. It doesn't need any fuel or tending from me. It provides just the heat I need to cook the food in a kettle, or bake a batch of bread in the oven. It doesn't waste any, heating up the room. I sometimes shut my eyes and think back to my kitchen before we put in that range, and



always on hot days like this, I shudder."

"Humph," said Grandma West. "We managed. Though I alluz did say husbands and children didn't take as much minding as the kitchen stove in my day."

Harriet Ellsworth put down the maroon sweater she was knitting and spoke thoughtfully.

"You're all right and if you are trying to put one thing before another, you are all wrong. There isn't anything, not any single thing that can fight heat like an electric refrigerator. Some times you can cook the best meal in the world and find everybody too hot to eat it. But if you plan your cooking so part of the meal spends a lot of time in the refrigerator and comes to the table cold, if the butter is hard, and the milk chilled, if greens look as fresh as spring, and there is ice cream to finish on, you won't have any trouble coaxing folks to eat.

"It keeps food safe, to begin with, no matter how hot it gets, and it makes it look better and taste better. Its the best outwitter."

To Get Around August

"Open the door, will you, Marty?" Terry's voice from the hall broke into our conversation. She came out pushing a little, narrow table. Ice clinked in a tall blue pitcher, and a platter of sandwiches and another of little iced cakes took our mind off the weather completely.

"What are you folks arguing about," she asked as she began to pour the iced tea.

"We're just figuring on ways to get around August," I said, going

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over to help with the glasses." Everyone uses a different tool."

"We got all sorts of dohickeys, and we can run 'em all we like," put in Grandma West, "but that won't make us cool, not by itself. We got to get kind of calm and peaceful inside. The very best way to get around August is to accept and love it like the rest of the year, —but keep the current turned on."

"Oh, Grandma," groaned Orpha, biting into a chicken sandwich. "If you weighed two hundred instead of ninety-eight—"

Grandma looked up over her glasses grimly. "I wouldn't," she said. "Be those chocolate cakes, Terry?"

It's in the Dressing

This is good salad weather. Everybody wants something cold and refreshing to eat these hot days. Salads for dinner; salads for supper. Party salads and picnic salads, and hurry up salads when some one drops in for tea.

Cold Makes It Crisp

You can turn most anything in the garden into a salad if you have time to get it cold. And you can make salads from canned fruit, canned vegetables, canned meat or canned fish, too. There is an art to making an attractive salad, a skill in arrangement that goes beyond the demands of texture and temperature every salad makes.

What's that? Oh, I thought I had told you before that a salad has good texture when it is crisp and pleasant to eat. Not mushy, nor stringy, with separate ingredients keeping their shape and individuality to a great extent, and all of it cold as cold on the tongue.

A good salad is as pretty a dish as you are likely to make in any day's work,—but pretty is as pretty tastes in this business. And no salad, not any salad in this living world is any better than its dressing. That is what makes this quartet of recipes really important additions to your file.

That Dressing of Helene's

The first has been bandied about from mouth to mouth, read over the telephone, reported in the local gossip column, and jotted down on the backs of countless envelopes till nobody knows where it did come from. All of my friends refer to it as "that fruit salad dressing of Helene's" because Helene got it down on paper and gave it to the rest of us. Some of us cook it until it is just thickened. Some of us who use it up rather quickly serve it raw, and one of our crowd in a burst of originality adds a cup of whipped cream to the dressing when she pours in onto a salad of sliced melon and pears, grapes or cherries, whatever her garden or fruitcellar offers.

Last week I had luncheon at Lowell Inn, a delightful place in Stillwater, Minnesota. The dressing over the fruit salad had such a tantalizing flavor that we spoke about it to the waitress. She smiled and said, "It's made with honey and celery seeds." Someday I hope to

One of the most important ingredients of any salad is cold

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The reasons why over a million and a half women have switched to Sunbeam Ironmaster have been given us by women themselves

Hundreds of homemakers tried all six leading makes of irons and selected Sunbeam Ironmaster as their FIRST CHOICE nearly TWO TO ONE. Here are some of their reasons why:— ● **QUICK, STEADY HEAT** *made possible by Double-Automatic Heat Control, an exclusive Sunbeam Feature.* Ironmaster not only heats fast but never *overheats*—gives *correct* heat right from the first plug-in. ● **HEAT CONTROL DIAL RIGHT UNDER YOUR THUMB**—up in the handle. A touch sets it for LINEN • COTTON • WOOLENS • SILK • RAYON. Easy to see, always cool. ● **FASTER IRONING, EASIER HANDLING** that enables you to finish quicker, feeling fresher. Fast High Heat for linens. Safer Low Heat for Rayons.

Get YOUR Sunbeam Ironmaster *NOW* and see what a big difference it makes on ironing day. $8.95 wherever good electric appliances are sold.

Made and Guaranteed by CHICAGO FLEXIBLE SHAFT CO., 5600 W. Roosevelt Rd., Dept. 30, Chicago, Ill. Canada Factory: 321 Weston Rd., So., Toronto. 52 Years Making Quality Products.

Famous for Sunbeam TOASTER MIXMASTER COFFEEMASTER WAFFLEBAKER SHAVEMASTER

find out what else went into it. But since I didn't here is a good one from the Home Service Bureau of the Electric Company in Milwaukee that is made with honey.

And another French dressing that has a tang of its own is made with tarragon vinegar. Do you grow tarragon in your garden? It is a perennial whose leaves make tart additions to your salads all summer and will flavor a crock of vinegar for your winter use. Tarragon. It is not as easy to grow as Chives but sturdy when you once get it established.

My young niece who was married last year gave me this last recipe for a quick dressing. She wrote it all out even to the inclusion in parenthesis, of the words (non-fattening) . . .!

Any one of these is what the well dressed salad might wear this summer.

For Fruit Salads

1 egg beaten
1 cup sugar
Juice and grated rind of one orange
Juice and grated rind of one lemon

Beat together. Serve as it is or cook until slightly thickened. Good either way, but it will keep longer cooked.

Honey French Dressing

¼ cup honey
2 teaspoons salt
1 teaspoon dry mustard
2 teaspoons paprika
2 tablespoons catsup
2 tablespoons lemon juice
¼ cup vinegar
½ cup salad oil

Blend honey with dry ingredients. Add catsup and lemon juice, mixing thoroughly. Add vinegar and oil gradually. Beat well.

(*More on page* 20)

Why I Would Like an Electric Range

(May Contest Winner)

"I would like an Electric Range because I believe in being progressive and modern. I like improvements in cooking technique that the electric range has made possible. With an electric range I would be free from the drudgery of grandmother days of endless cleaning of pots, pans, stove, walls, and even the floor of soot, ashes and other dirt accumulated from wood or coal fuels; of fire in buildings, fire hazards, scorched or unevenly cooked foods.

"I would like an electric range because my family must be properly fed at a minimum cost of food, time, fuel and energy. I can save on food costs by lessening cooking failures and by conserving precious vitamins and minerals by controlled heat and waterless cooking.

"I can save time by eliminating fire-building, lessening cleaning time and time spent in actual cooking. I can save on fuel by using the automatic cooking controls that assures proper cooking of foods in a short period of time.

"I can save energy by eliminating all these extra tasks and my kitchen remains a cool pleasant place to work in.

"I would like an electric range because no homemaker can remain efficient and not try to keep up with the progress of time and the events of the world in news, science, etc. An electric range would give me time for this and assure my family of well cooked meals. Cooking would be a pleasure instead of a dreaded task.

"I would especially like an electric range because I would like to impress upon my daughter (and sons) that home-making is the most dignified profession in the world—and because 'I want to keep 'em down on the farm'."

MRS. LUCRETIA TALBOTT,
R. 2, Belington, W. Va.

"A REAL BARGAIN!"

"Jim and I decided the way to save money on our new electrical appliances was to start off with the *best*. In a sewing machine, that meant a Singer, and it's already proved a *real* bargain!"

The "Queen Anne" is one of Singer's loveliest and smoothest electrics, made in beautifully matched walnut. See it, along with other cabinet and portable models, at your nearest Singer Shop. Or, drop us a card for a demonstration in your home. There's no obligation. Singer offers liberal trade-in allowances.

SINGER *"1500 Singer Shops and Authorized Distributors"*
SEWING MACHINE CO., 149 Broadway, N. Y.

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French Dressing With Tarragon Vinegar

4 tablespoons lemon juice
2 tablespoons tarragon vinegar
6 tablespoons salad oil
½ teaspoon salt
1 teaspoon paprika
6 tablespoons brown sugar
¼ teaspoon grated onion

Place all ingredients but oil and onion juice in a sauce pan. Bring to a boil to dissolve the sugar. Cool and combine with other two ingredients. Keep in a bottle or covered glass jar in refrigerator. Always shake thoroughly immediately before serving.

French Dressing—Non-fattening!

1 small bottle catsup
½ cup mineral oil
Juice of one lemon
1 tsp. of Lea and Perrins sauce.

Put in a mason jar, cover tightly and shake well.

Churning with Current

Mrs. George Huddleston who lives near Roanoke, Virginia, has been selling buttermilk in a neighboring town for some time. Buttermilk, as you may not know if you have not lived in that part of the country, is a highly popular drink in the south. In fact many folks churn every day so they can always have it fresh.

Mrs. Huddleston could have sold much more buttermilk than she did. She might not have let that bother her very much if it were not that she had plenty of milk she would be glad to turn into money, too. It was the churning that stopped her. Churning is hard work, and she felt that she was doing just about all of it she could with her old churn.

"One day I did go into a hardware store to inquire about larger churns," she said. "The clerk asked me why I didn't get one run by a motor. I had never even seen an electric churn before that. He showed me one, pointing out how easy it is to run

and to care for, and he didn't let me leave that store until I had bought a churn.

"And now," Mrs. Huddleston went on, "I have more buttermilk with less work, and I have increased my sales enough to get back the price of the churn from the milk money in two months. The cost of operating it is so small that it does not cut into my profits to amount to anything."

Electric churns such as Mrs. Huddleston bought are made in several sizes. Two gallons, four gallons, six and ten. As she says they are

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AN INVESTMENT IN HEALTH AND HAPPINESS THAT PAYS FOR ITSELF

There is nothing that will bring your entire family more real comfort than running water. Why not have it now when a Delco Water System will pay for itself on any farm quickly by saving time, increasing milk, egg, and vegetable production and helping fatten stock.

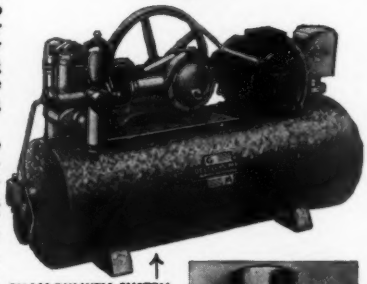
For the past 25 years Delco and General Motors Engineers have been studying farm water system problems and constantly trying to build greater value into Delco pumps.

Today they offer you deep or shallow well pumps with capacities from 180 to 1600 gallons per hour which will, not only give years of care-free service, but are so economical both to buy and operate, that they soon pay for themselves and then pay you dividends for years and years.

Now is the time to learn the facts. Don't go without running water another season. Ask your Delco dealer or mail the coupon. No obligation, of course.

DELCO WATER SYSTEMS

Product of General Motors



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DELCO-JET SYSTEM

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Please send, without obligation, full information on Delco Water Systems.

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Town.....
State.....R.F.D.....

MAIL COUPON TODAY!

August Contest

Earning pennies by saving pennies is an opportunity most women have. Some do it with food, some with furnishings, and some with the clothes the family wear.

If you have saved money with your sewing machine, you will be just the person to enter our letter contest this month. The subject is "My sewing machine earns me money by——." We will pay five dollars to the writer of the most interesting and helpful letter. If there are other letters we can use, we will pay one dollar for each of them.

The contest closes August 31.

Send your letter to Gail Meredith, 700 S. Mills St., Madison, Wis.

easy to handle and to operate. The container for the cream lifts out so you can cool the cream in it if you like and so you can clean it easily.

A small motor moves the dasher at proper churning speed, so the work of making butter or churning for buttermilk resolves itself into caring for the cream beforehand, and working the salt into the butter afterwards.

When the little blobs of butter come to the surface, you can draw the buttermilk from the churn through a spigot at the bottom, refill the container with water and wash the butter right in the churn.

The churn needs the same cleaning you would give any dairy utensil, thorough washing with warm soapy water, and a hot rinse. The dasher should have a scalding rinse and a good sunning to keep it sweet.

A dasher that fits right onto the beater spindles of one of the electric mixers will make butter in a four quart glass churn. You can see when the butter comes, and have only to detach the dasher, pour off the fresh buttermilk, and then rinse the butter clean and salt it as usual.

Motors make churning easier whether you're churning for butter or whether you just like to have fresh buttermilk every day.

By JEROME J. HENRY

Radio as Springboard

Radio programs should be springboards, not blackboards, says Irve Tunick, who writes the "World Is Yours" series dramatizing the world of science.

"We're not trying to teach anybody anything," he says flatly. "We're not sure that we could if we tried. We try to stimulate the listeners, get them to use the program as a springboard for some mental digging of their own."

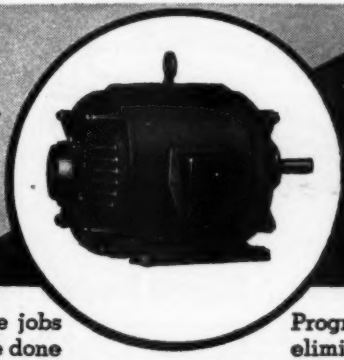
The half-million letters asking for additional data on the dramatized subjects is testimony that some of the fans, at least, are using the springboard. Tunick does a little digging, too. He must dramatize 52 subjects each year, ranging from "The Electron Microscope" to "The Story of Vitamins." The Smithsonian Institution and the U. S. Office of Education, which are co-sponsors with NBC, have an elaborate set of checks to insure complete authenticity of the programs. So Tunick digs.

Here's some of the subjects he'll be busy with: August 2, Hubert Ward: An Explorer and Artist Among the Congo Cannibals; August 9, Our Nearest Neighbor in Space; August 16, John Ericsson: Swedish-American Inventor and Engineer; August 23, Chemistry and American Independence; August 30, The Norsemen in Greenland; September 6, Gilbert Stuart: Painter of Great Americans; September 13, Sir Walter Raleigh; September 20, Insect Allies of Man; September 27, Industry Calls on Physics; October 4, Emerald: Emblem of Happiness; October 11, Samuel Slater: "Father of American Manufactures"; October 18, Zebulon Pike: Early Explorer of the West; October 25, South Sea Islanders.

Fans Have Nerves of Steel

Himan Brown, who directs the shuddery Sunday Night Series, "The Inner Sanctum Mystery," is scaring himself badly each week in an ef-

CENTURY *Job Selected* MOTORS



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Here are only a few of the jobs on your farm that can be done quickly, easily, and at low cost, when you drive your equipment with Century Motors.

Progressive farmers everywhere are eliminating many back-breaking jobs through the use of modern equipment powered by Century Motors.

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Cream Separators
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For full information as to the type of Century Motor best suited to your needs, see your equipment dealer or write direct today.

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fort to work up chilling programs for the radio listeners.

He started producing the series "modestly," he says, using only vampires, strangled snakes, deathly nursery rhymes and supernatural demons, zombies, black magic and voodooism. But the fans turned out to be sturdy fellows with half-inch armor plate for skin and nerves of spring steel.

"So we increase our weird music department and arrange for expert 'horror men' like Boris Karloff to appear as our guest stars. What happens? Not a sign of surrender from the audience. The fan mail cries for more and more horrible mystery," explains Brown.

"Maybe we'll have to hire a ghost!"

No Hero at Home

Richard Williams, the 11-year-old who is a super-expert on mathematics and geography for the "Quiz Kids" radio program, has one of the highest I. Q.'s ever tested by the University of Chicago—but he's no hero in his home. Richard's father and mother fully recognize his brilliance, but are determined that it's not going to keep the boy from having a normal childhood.

For instance, Richard could probably do high school work easily, but his parents have refused to allow him to leave his age group, so he is in the sixth grade along with the other 11-year-olds. "If he was advanced to high school, he would be with children five or six years older, and he wouldn't have any friends," his father explains. In the sixth grade he is happy, has lots of friends, and his teachers and parents work together to help him find other things to do to keep from being bored with school work which he could have done several years ago. He has some assignments that are not required of the other children—in the sixth grade. Instead of arithmetic, Richard studies geometry—and his parents give him outside lessons in music and typing, and provide him with maps, books and atlases for his major hobby, geography.

The sound common sense Richard's parents display in this respect is carried through every other aspect of his training. Mrs. Williams does not parade his achievements or keep a scrapbook of laudatory clippings. She talks as much of his older brother, Glen, as of Richard. The family enjoys Richard's success as a "Quiz Kid" just as they enjoy all the other things they do, happily and casually; but he is just a "regular boy" to them.

Meet the Bartons—a typical American family, whose radio program, "The Bartons," is heard each week-day night on the NBC-Blue network. They are Dick (Bud Barton) Holland, Fern (Mrs. Henry Barton) Persons, Jane (Midge Barton) Webb, and Bill (Henry Parsons) Bouchey.

The New Aire-Matic "90" Cleans ALL the House!

Premier's Newest, Biggest Bargain

There are dozens of different cleaning jobs around the house—and Premier's new Aire-Matic is the quick, easy way to do them all! There's plenty of power for complete thoroughness in cleaning rugs as well as the many once-difficult places above the floor—and to do it in a hurry, too. You'll find it's no trouble at all to move this compact, cylinder-type cleaner from room to room—or to use the 7 convenient attachments which are included. Try the new Aire-Matic "90" right away—it's a time-saver, work-saver, money-saver!

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Please send me complete information and literature on: ☐ The Premier Aire-Matic "90"; ☐ other Premier cleaners. Also send me names of nearest Premier dealers.

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Questions and Answers

Fly Electrocutors

Question: *We note that several issues of your magazine have carried advertisements of fly electrocutors. We would appreciate information as to the success of these and which are considered most successful.*

J. R. A., Va.

Answer: We are familiar with results of only the box trap and electrified window and door screens. Box traps about 12 x 18 in. and 4 in. deep with an electrified grid over the top are made by several manufacturers. Bait such as a saucer of sour milk is placed in the box in starting, but the dead flies make the best attraction for live ones later. These traps used around barns, canneries and milk rooms have been effective in killing great quantities of flies. Electrified panels in door and window screens have given good results in kitchens, bakeries and barns where odors attract flies. No trap that I know of will completely eradicate flies even though they kill many thousands. Both of the above types are effective if properly placed. They cause interference on some types of radios. A list of manufacturers has been sent.

One Compressor for Two Refrigerators

Question: *I am thinking of installing a refrigerator unit in my milk storage. Have bought a water-cooled Frigidaire unit with 1 hp motor. Is it possible to connect onto the same unit to operate a milk cooler and home-made zero freezer? I have had some experience with refrigeration but would like some information on installation and maintenance.* J. B., Mass.

Answer: It is possible to use one compressor unit for two cooling jobs providing, of course, that one unit is large enough to handle both jobs. The usual method is to provide separate expansion valves and coiling for each unit to be cooled.

We have no instructions for the installation of refrigeration equipment. My suggestion to you would be to write the Frigidaire Company, Engineering Department, Dayton, Ohio, giving them a description of your compressor unit with the numbers on it, and asking them to send you diagrams showing how to connect it for the job you wish to do. The manufacturer of the machine is the one best able to give you this information to make the equipment work satisfactorily.

Bugs and Reading Lights

Question: *Is it true that bugs are not attracted to yellow or tinted light globes? Where can you get them and are they good to read by?*

J. B. LeD., La.

Answer: Bugs are attracted to yellow and tinted light globes, but perhaps not as strongly as to clear lamps. The main difference, however, is that the tinting shuts out some of the light or, in other words, the lamp does not make as much light.

Different insects are attracted differently by different colored lights. The many variations have not been catalogued. If you are thinking of reading in comfort outside under a light my suggestion would be to use a diffused light from a shaded lamp to see by and have a glaring clear lamp globe some distance away to attract the insects.

Electric Soil Sterilization

Question: *Isn't it true that by*

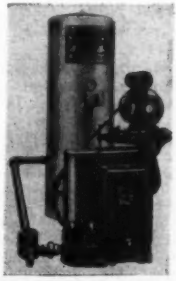
RUNNING WATER

We, here in America, may justly be proud of—and thankful for—our higher standard of living. And one of the things which most impresses visitors to our shores is the prevalence of electricity and running water in our rural homes.

The American farmer has not allowed his geographical location to deny him and his family the benefits of health, comfort, and fire protection that running water provides. Nor has he overlooked the additional crop and livestock yields that an abundance of running water can bring.

Because of the American farmer's demand for running water, it has been possible for manufacturers like GOULDS to lower the cost of the necessary equipment until, today, a GOULDS JET-O-MATIC Water System for either shallow or deep wells can be operated for as little as three cents per day, costing little to install and practically nothing to maintain.

At such a low cost, running water is a paying proposition, not an expense. You owe it to yourself and your family to investigate. Write today.



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GOULDS PUMPS, Inc.
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Please send me the name of the nearest Goulds Distributor. And full information about the new Goulds JET-O-MATIC Water System.

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PLENTY OF RUNNING WATER
yours to enjoy at small cost when you install a dependable F & W system. Small units, large capacity. Sizes and types to meet needs of all suburban and rural homes, for deep and shallow wells.

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75th Anniversary Year

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As a reader of this magazine you are entitled to our buyers' information service free of cost. When looking for information about equipment or material that you plan to buy, first read carefully the advertisements in this issue. Then, if you do not find what you want, just use the coupon below to tell us what you need and we will see that you get the information you want.

Use This Reader Service Coupon

ELECTRICITY ON THE FARM
Readers' Service Dept., 24 W. 40th St., New York

Without cost to me, please have manufacturers send complete information on the following Electrically Operated Equipment which I am thinking of buying:

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sterilizing soil with electricity instead of steam the temporary soil dormancy described in your article on page 32, May 1941 issue can be avoided? By use of electric heat, which is the most convenient and considering all factors the cheapest, the soil is ready for immediate use after sterilization.

H. W. A., North Carolina

Answer: In research work on Soil Sterilization which was conducted under my direction at the University of Maryland a number of years ago, we found the same period of delay in growth reported by the Colorado Experiment Station. The actual sterilization of the soil is accomplished by the heat produced and it seems to make little difference how that heat is generated.

The so-called electric sterilization of soil whether it is done by passing the current directly through the soil or by placing electric heating elements in the soil, is not an electrocution process but merely a means of heating the soil to a temperature which destroys detrimental organisms, insects, and seeds. Strong claims have been made for some electrocution processes but under actual tests, so far as I have ever learned, these processes have not produced the results claimed.

Noise—Cow Drinking Cups

"In your June issue I noticed an inquiry and reply on the above subject. I know of several farmers including myself who have had the same difficulty and cured it very easily and permanently by installing a pressure reducing valve so the drinking cups in the cow barn operated at 8 to 12 pounds pressure and the trouble was over. Many farmers have tried the air cushion idea and find it is fine for a week."

Frederick G. Smith, R. 2,
Freeport, Ill.

We greatly appreciate such helpful suggestions.—Editor.

Frosted Refrigerator

Question: *I am troubled with my refrigerator. It gives good service but the unit is always thickly covered with frost and ice. I have to defrost it about every five days. I use it very hard as we have a tavern and lunchroom so it is opened pretty often. Also we have to make a lot of ice cubes. Is there anything I can keep in it to keep the moisture down so it won't frost up so quickly?*

Mrs. J. S., Ill.

Answer: There is little I can suggest to prevent frosting up of your refrigerating unit. You might help it some by keeping moist foods in covered dishes and waterproofed bags or wrappings. This frost on the unit represents moisture taken out of the food in the box or the air surrounding the unit. It is made worse because of your frequent opening of the door and your large use of ice cubes which probably keeps your compressor running much of the time.

When you buy your next refrigerator you can overcome this difficulty somewhat by getting one with a larger ice cube compartment and also having closed-in moist storage compartments for moist foods.

Egg Cooling

"Eggs have a tendency to be watery at this time of the year, because pullets lay their poorest eggs —poorest in respect to firmness of the whites—toward the end of their laying year," says F. P. Jeffrey of the New Jersey Agricultural Experiment station. There is no preventive for this. However, incorrect handling is really the most important cause of watery egg whites, and this is something poultrymen can do something about. Gathering eggs frequently and cooling them quickly become especially important in August for poultrymen who want to preserve egg quality.

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Enjoy Healthful Hot Water at Low Cost . . . Install a
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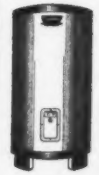


AN efficient, economical Thermogray automatically provides an abundant supply of piping hot water to help make your work easier. Equip your home NOW.

Write for FREE Circulars

THERMOGRAY CO.
400 W. McKinley Jefferson, Iowa

"This is our new Boarding House model with a burglar alarm against midnight snackers!"

Improvised Lamp Brooder Saved Turkey Poults

By Raymond Donovan

Frank Winant, sixteen year old 4H Club poultry raiser of RFD 3, Lake Hopatcong, New Jersey, tells the following experience he had last March in brooding a hundred turkey poults.

Frank was going to save money by using an old oil brooder he got for two dollars. His father who had had years of experience in raising all kinds of poultry had advised him to buy an electric brooder, fearing the oil brooder could not be trusted and was too much of a hazard. At ten o'clock he went to the station to wait for the poults. They didn't arrive until late in the afternoon and the boy started home with them stacked in boxes on the seat beside him. As he drove into the yard, he saw the brooder house was burned black and the roof was gone. The oil brooder had overheated and exploded.

After seeing that the poults were taken care of, he and his father got some boards together and built a raised floor in the reasonably tight nine by twelve tool shed. Litter was spread on the boards and then Frank rushed to the hardware store and bought ten electric light sockets, a hundred feet of insulated wire and fifteen sixty watt bulbs. Five of them were for spares. A sheet of zinc was securely fastened in place and ten lights were hung under this reflector and about a foot from the floor. The improvised brooder was ready. In less than an hour the temperature registered one hundred and afterward it varied less than two points even on the coldest nights.

The poults didn't seem to mind the improvised brooder and none of the flock was lost due to exposure. The electric bill, which Frank's father said would be enormous, surprised them all by being much less than they predicted.

If you think Frank isn't proud of his electric brooder, you should see his face light up with a big smile when you ask him how it worked.

Note. Ray Donovan has sent us

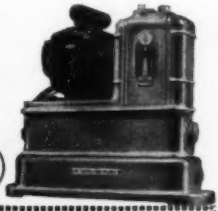
(*More on page 26*)

Bull Fence

This is a corner in the bull pasture on the W. C. Gist farm near Wellsboro, West Virginia. Mr. Gist, the county agent in Brooke county, says it is a good fence. It has strong corner posts and is well braced. But the thing about it that is different is stapling the woven wire high enough on the outside of the posts so that a man can roll under the fence quickly should the bull take a sudden notion to claim the pasture for himself. Note the electrified barbed wire supported on insulators on the inside of the posts.

WHY PUMP?.. TURN A FAUCET WITH A DAYTON LIFE-LONG SYSTEM

PLENTY of running water for kitchen, bath, garden and lawn — ready when wanted — is most economical with a DAYTON Life-Long Water System! New Dayton DeLuxe Models are available in capacities from 250 gal. per hour and up. The Dayton line includes shallow and deep well models, jet pumps, cellar drainers and water softeners. Low in price, inexpensive to operate. Mail coupon TODAY for descriptive booklet.



THE DAYTON PUMP & MFG. CO.
Dept. EF-5, Dayton, Ohio
Send booklet on Dayton Water Systems.
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Street or R.F.D._____
City_____ State_____

GET HAPPY MILKING WITH CLEAN-EASY

The Biggest Milker Advancement in 1941! Clean-Easy Milker now equipped with sensationally new rubber teat cup with squeeze and suction combined to give faster, cleaner, more natural milking action.

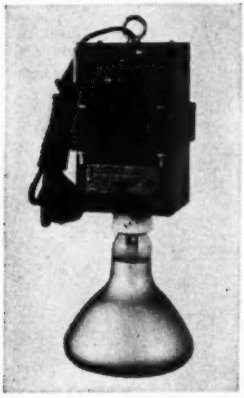
Write Dept. 30

BEN H. ANDERSON MFG. CO.
MADISON, WIS.

Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

RS4 Ultra-Violet Lamp

This ultra-violet producing RS4 lamp is announced as a new item of equipment this month. The RS4 lamp has the same rating and effectiveness as the S4, 125-watt lamp but has a reflector inside the glass of the lamp itself. This has the advantage of being a better reflector, of remaining clean in dirty places and of saving aluminum, from which ultra-violet reflectors are made, for defense purposes. The new lamp without transformer and cord will sell for $10.



Lawn Mower

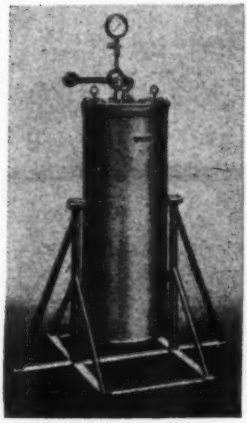
In the May issue we described a new electric lawn mower. So many inquiries and letters containing orders with checks were received that the manufacturer's plant and clerical facilities were swamped. If you have failed to receive a reply to your letter or order, we have this to say for the manufacturer. He has a small plant. The demand for mowers was greatly in excess of that anticipated. Priorities and speeding up of demand generally have made it very difficult for him to get materials. He says: "We should have dropped each one a card or letter advising them of this fact but our time was so completely taken up that we did what many other manufacturers have been doing to us, ignoring our inquiry if they could not supply us with what we inquired about."

We do not like such treatment of inquiries and have told the manufacturer so. However, these are strenuous times, times involving disappointments and sacrifices. We have more of them to face on repairs, replacements, etc. It is well to plan ahead and nurse our patience.

Electric Feed Cookers

An electric cooker for cull beans, musty grain, small potatoes, etc., has recently been placed on the market after being developed at Michigan State College. It looks like a small milk cooler cabinet, is insulated and supplied with two 500-watt immersion heaters controlled by a thermostat. Just enough water to cover the heating elements is placed in the tank. The feed with water is put in open cans which are placed in the tank. Some of the water is turned into steam, which cooks the feed—100 to 150 lbs in 18 to 24 hrs. In one test 7 kw hrs were used to cook 125 lbs. No stirring; no scorching.

From England comes a report of an electric cooker which looks like a small insulated range boiler. It holds 11 gallons, has a regulation immersion heating unit near the bottom, and a removable bolted-on top with gasket, steam gauge and safety valve. The cooker is supported on trunnions on the sides so it may be tipped for emptying. It is charged with water and bones or feed to be cooked. The cooking is done under steam pressure.



Courtesy Implement and Machinery Review, London.

New Publications

(Publications are obtainable from the addresses given in the descriptions.)

• BRICKLAYING—AN ANALYSIS OF THE TRADE. Vocational Educ. Bul. 208. U. S. Office of Education. 238 p. illustrated text on bricklaying, training, job analysis, exteriors, interiors, brick colors, fireplaces, etc. 40c from Supt. of Documents, Washington, D. C.

• BETTER WATER SYSTEM. Folder No. 189 describing Myers Deep and Shallow Well Ejecto pumps. Illus. of installations. The F. E. Myer & Bro. Co., Ashland, O.

• THE SURGE FENCER. 20 p. catalog describing different AC and battery units. Babson Bros. Co., Chicago.

Improvised Lamp Brooders

(Here from page 25)

several short items, all of which have told of something practical a farmer could do with electricity. When we told him we were pleased to have these helpful stories, he wrote us a letter about his experiences, from which we quote:

"When I was a boy, I worked on my father's farm, and I remember how hard the farm work was. We did not have electricity to help us and I used to try to figure how electricity might do certain jobs, if we only had it. I made up my mind then that when I got older, if I could pass along any information on how to lighten farm work, I'd do it. So you see I am more interested in giving a helping hand in what I write than I am in the checks I receive for it.

"Then, I believe that ELECTRICITY ON THE FARM has done more than any other medium in interesting farmers in electricity. I know that my copy gets passed around each month among a number of farmers near here."—*Editor.*

CLASSIFIED ADVERTISING

ELECTROCUTE FLIES—*"Cheaper than Spraying"*—LYON Fly Electrocutors cost less than 1c per day to operate. *Low delivered price!* Order direct or see your dealer. COMPLETE POULTRY SUPPLIES—Infra-Red Ray and Fan Brooders. Alarms, *Parts and Plans for building your own brooder.* Over 150 items, FREE 52 PAGE CATALOG! Lyon Rural Electric Company, Dept. EF, Greensboro, N. C. or San Diego, California.

GET YOUR FREE COPY NOW. Bussey 100-page book for Poultrymen. Low Factory Prices. Parts for electric brooders and batteries; heating assemblies; wire Fabrics; Poultry Department. Save money. BUSSEY PEN PRODUCTS, 5171 West 65th St., Chicago.

RHYME CONTEST

What Would You Say?

Fun for all—the whole family can take part in this contest. Cash prizes will be awarded for the best suggestions for a last line to complete the verse at the bottom of this page.

June Contest Awards

for the last line of this verse:

The farmer to the cow exclaimed:
"The 'lectric milker's grand,
You'll find it much more gentle
.....

FIRST PRIZE—$20 Cash

"It's a modern 'four-in-hand'."
DELLA A. SIMON,
RFD5, Chillicothe, Ohio

SECOND PRIZE—$5 Cash

"And germs plus dirt are banned."
RHODA H. ALLEN,
RFD1, Fremont Nebraska

Five Consolation Prizes—$3 Each

"By Horse-power than by hand."
FRANK D. SWOFFORD,
RFD1, Box 426, Potlatch, Idaho

"While for speed it rates a hand."
MRS. M. PATTERSON,
RFD2, Granton, Wisconsin

"Thru the pulse of a 'lectric hand."
MRS. ROBERT WIDEMAN,
RFD5, Medina, Ohio

"Than Man Power can Command."
GEORGE E. STALEY,
De Ruyter, N. Y.

"With pressure from 'Wired-Hand'."
MRS. EDWINA F. FORRISTER,
RFD2, Framingham, Mass.

HONORABLE MENTION

The following names are deserving of honorable mention for the lines submitted:

Virgel Farris, RFD5, Corinth, Miss.; Marguerite Theobald, RFD1, Barneveld, Wisconsin; Mrs. Lee Kerns, RFD9, Box 338, Charlotte, N. C.; A. C. Mitchell, Crozier, Virginia.

AUGUST CONTEST RULES

Seven cash prizes will be awarded for the best last line to complete the verse in the coupon below. Your suggestion should rhyme with the second line.

The first prize will be $20 cash; the second prize, $5.

In addition, five consolation prizes of $3 each will be awarded for the best last line furnished.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

All members of the farm family to whom this magazine was sent may enter, but each contestant may submit only one line.

Question "A" must be answered.

Entries should be sent to the Contest Editor, ELECTRICITY ON THE FARM, 6 No. Michigan Avenue, Chicago, Illinois, and must be postmarked before August 30.

The decision of the judges is final and all entries become the property of ELECTRICITY ON THE FARM.

Winning names and entries will be announced in the October issue.

Send your entry on the coupon or make out a similar form on a plain sheet of paper or government postcard.

When you're cooking cabbage
And the kitchen starts to smell
It's electric ventilation

My suggestion for a fourth line to the above verse is:

.....

.....

(a) Do you read the manufacturers' advertisements printed in ELECTRICITY ON THE FARM? ..... How could this advertising be made more interesting and helpful to you?

.....

.....

.....

.....

My name is.....

R.F.D..... Post Office.....

County..... State.....

I get electricity from..... (8-41)

HARVEST TIME

Brings Work That Electricity Should Do!

THERE is work for electricity all year 'round on the farm, but it seems as though there is even more at harvest time. A lot of the harvest jobs that used to be slow work go through like chain lightning with the help of a portable electric motor. One electric motor will do the work of several men, for a fraction of their hourly wage. Electricity is always on the job; it never tires, never leaves before the work is finished.

Your Electric Company Rural Specialist will be glad to call and help you plan the electrification of your harvest time jobs and other farm chores. Call or write today.

ASK YOUR ELECTRIC COMPANY

or your electrical equipment dealer if you need further information. Or, if you prefer, address your inquiries to **ELECTRICITY ON THE FARM, 24 West 40th Street, New York, or 6 No. Michigan Avenue, Chicago.**

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ELECTRICITY ON THE FARM
24 West 40th Street
New York, N. Y.

Postmaster — If undeliverable FOR ANY REASON, notify sender, stating reason on **Form 3547**, postage for which is guaranteed.

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